Doc. Type:	Product
Sub. Type:	Specification
Status:	**Rev 1.0- Draft**
P/N:	LGV41
Author:	AC

LGV41
Product Specification

Revisions

Revision	Issue Date	Author	Comments
1.0	2 juin 2016	AC	First specification

Other document

Ref	Titre
SFDO-LGV41-042-0101	Application note

Table of contents

Table of figures

1 Introduction

Object: Define the product specification of the LGV41 product, developed by Newsteo, in term of technical characteristics, physical dimensions, aperture, accessories and casing.

Reference: **PFPN-LGV41-003**: Logger for vibrating wire, in aluminium case. 4 vibrating wires inputs.

2 Summary of the product functioning

1 - The Data Loggers
They are spread in the area which has to be monitored. They send to the RF-to-USB key by radiofrequency the measures they take. They can be wireless configured and updated.

2 - The RF-to-USB Key
It is the bridge between the PC and the loggers

3 - The RF Monitor
This software is installed on the PC and allows the monitoring of the loggers
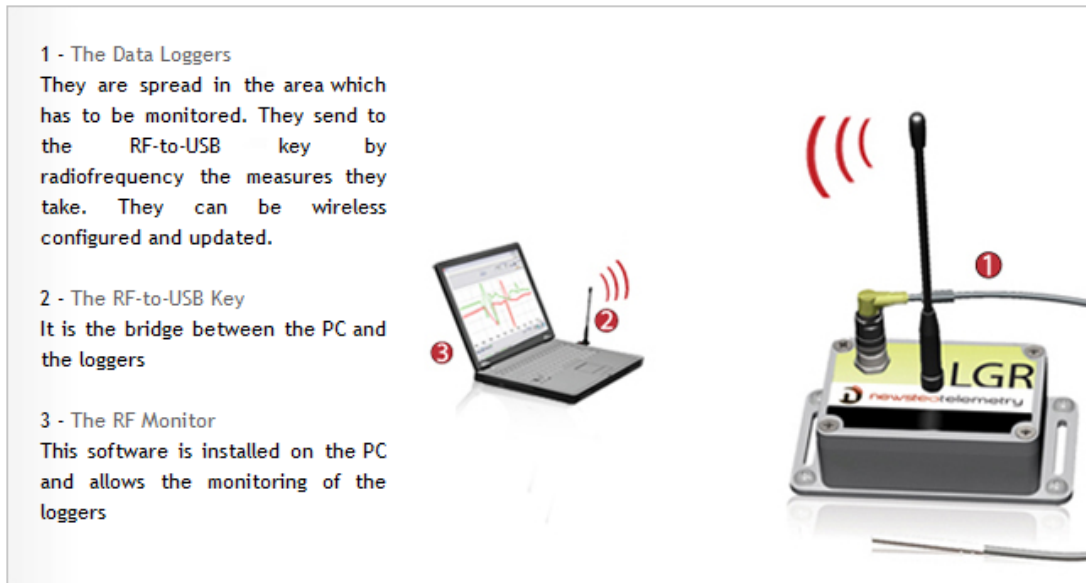
Figure 1: Functioning

The loggers can be used in two different modes:
- **Monitoring** (real time monitoring applications): the logger sends in real time its measurements to the PC. If a measurement is not received by the PC, it stores it inside its internal memory and sends it to the PC on the next communication channel
- **Record / Restitution** (a posteriori monitoring): the logger records in its embedded memory the measurements it takes. The user can download on the PC all the stored measurements when he wants.

3 Newsteo Logger LGV41

3.1 Technical characteristics

TBC : To be confirmed
TBD : To be defined
NA: Not applicable

3.1.1 Sensor interface – sensor supply

Characteristics	Performance
Inputs	**4 inputs (for 4 vibrating wires)** For each input: - 1 shielding - 2 wires for vibrating wire - 2 wires NTC
Vibrating wire	
Input range	300 Hz … 3500 Hz with selectable frequency range
Accuracy	+/- 1 Hz
Resolution	0.1 Hz
Sensor power	Sequential powering done by the Logger
Measurement sequence	Sequential measurement of 4 channels
Duration of the measurement	**From 300 Hz to 1200 Hz : 40 s / input** **From 1201 Hz to 3500 Hz : 90 s / input**
NTC	
NTC value	From 1 k to 100 k
Measurement range	0 Ohm to 1 MOhm
Accuracy of the acquisition chain	1 % (indicative)
Resolution	0.01°C (depending on the sensor)
Sensor power	Sequential powering done by the Logger

!!!- Preliminary specification subject to change without notice from the writer -!!!

5/11

3.1.2 Connection of the vibrating wires & NTC

Sensors are not provided by Newsteo.
The connection to the sensor (s) is made on a screw terminal block soldered to the electronic board.
- 1 terminal block of 20 points (4 x 5 points per channel) present on the board

The connection is made by the client. Wiring diagram indicated on the board.

Figure 2: Vibrating wires connection

3.1.3 Electronic board temperature

NTC, accuracy +/- 0.5 °C [-30°C … + 70 °C].

3.1.4 Casing

Characteristics	PFPN-LGV41-003
Temperature range of use of the Logger	-40 °C to + 85°C
IP Level	IP67
Sensor connection	1 cable gland per channel
Cable gland diameter	3.5 mm to 6.5 mm

3.1.5 Power / Battery life

Characteristics	PFPN-LGV41-003
Battery	1 SAFT LSH14 C-size spiral cell with connector Accessible and user replaceable battery
Battery life @ 25°C	Up to 1 year for a measurement frequency of 1 hour

3.1.6 Radio connector / transmission

Characteristics	PFPN-LGV41-003
Antenna connector	Male N-type connector
Antenna	1/2 wave antenna (included)
Radio range (free field)	Up to 1 kilometre
Antenna dimensions	Length : 228 mm ± 10 mm Diameter max : 20 mm at the connector

3.1.7 Other characteristics

Characteristics	
Measurement frequency	Adjustable from 1 measurement per minute to 1 measurement every 4 hours in recording. The measurement frequency has to take into account the measurement duration (see § *3.1.1 Sensor interface – sensor supply*) Booster mode (measurement acceleration: measured every 5 seconds or so) available in Live mode for testing (this mode does not allow recording of the measurement in the logger memory)
Embedded Memory Capacity	About 10000 set of measurements
Time resolution	1 second
Time deviation	+/- 2 min/month @ 25°C
ILS	ILS integrated for several functions: - wakeup of the product in hibernate mode - take of a measure outside of the frequency measure set - forced reboot by holding the magnet 15 seconds
LED	Two-color LED: orange on boot (20s) Very fast orange flashing during the passage of magnet (on the Magnet Area)

3.2 Radio norm

Technical features of the radio technology used by Newsteo:

Radio characteristic	
Frequency	868 MHz (Europe)
Available channels	12 channels from 865.2 à 869.6 MHZ
Carrier spacing	400kHz
Modulation width	100kHz per channel, i.e. +/-50kHz
Bandwidth	50 Kbits/s
Modulation	Modulation GFSK with Manchester encoding
Protocol type	Bidirectional owner protocol with "LBT" technique : Listen Before Talk
Transmitter nominal power	10mW (+10dBm)
Available power at the SMA connector	+6.6dBm
Emitted Radiated Power (ERP) with 1/4 wave antenna	+3dBm i.e. 2mW (standard permission: +14dBm i.e. 25mW)
Reception sensibility	-100dBm
Bandwidth occupation	<1% for a standard using (record/presence/buffer) during data downloading : 60% of LBT
ISM Standard	European norm REC0073 in g, g1, g2 and g3 categories

3.3 Casing specification
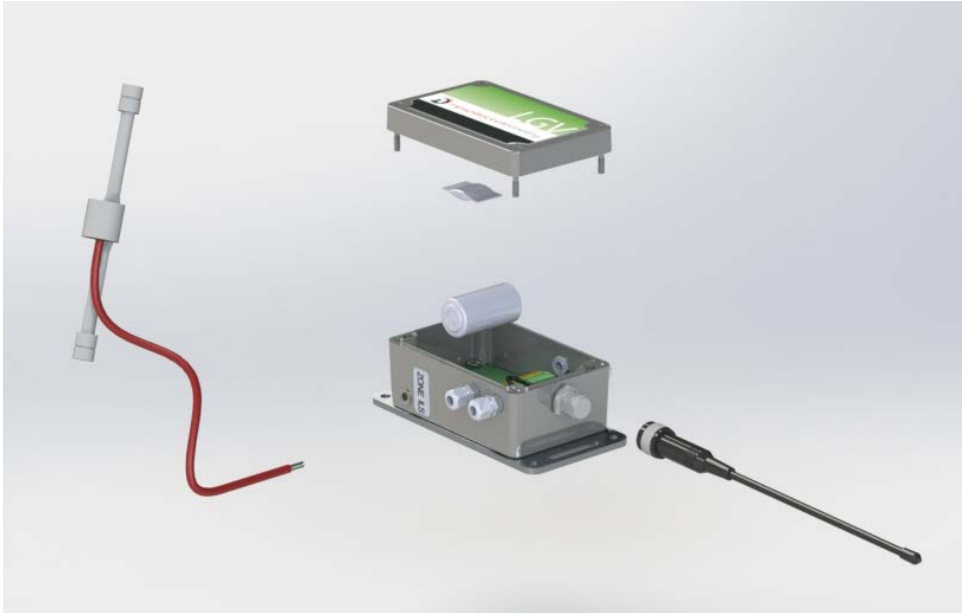

Figure 3: PFPN-LGV41-003 – Casing closed

Figure 4: PFPN-LGV41-003 – Casing open

Characteristics	Newsteo
Features	Aluminium casing (4mm)
Fixation	Fixation support provided screwed in the casing for screwing in 4 points or strapping through 2 holes
Colour	Grey (aluminium)
Dimensions (w/o antenna, w/o fixation support)	Width: 125.4 mm + Type N female connector Depth: 80.4 mm + Type M12 female connector Height: 58.80mm
Weight	About 280 g
Stickers	2 stickers on the product : - 1 sticker on the top face, giving the product range - 1 sticker on the side, giving the complete product reference and its serial number
Thermal protection	No thermal protection provided

3.4 Starting of the logger

The product is delivered with a battery inserted, in hibernate mode.
The user has to pass a magnet on the product to wake up it and to set it.
The time is set in production.

3.5 Certification

Products certified for radio use in Europe, on the frequency of 868 MHz (ISM band). For use in another area, check with local authorities.